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USDA ■ Forest Service

## forest pest management methods application group

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### NEWSLETTER CURRENT SERIAL RECORDS

#### A LOOK AT THE NEW MAG FAMILY.

With the relocation of the Methods Application Group to Ft. Collins, our staff has taken almost an entirely new look. Therefore, an introduction to the newest members of our staff seems appropriate.

Bill White is the insect and disease impact evaluation specialist. Bill transferred to MAG from the Rocky Mountain Region (R-2) Forest Pest Management Staff in Denver where he served as supervisory entomologist. He has held previous assignments as applications coordinator for the USDA Expanded Research and Development Program on Gypsy Moth and as an entomologist with the Northeastern Area.

Mike Marsden recently joined MAG as the group's biometrician. Mike transferred to Ft. Collins from Missoula, Montana where he was a statistician for the fire effects project at the Northern Forest Fire Laboratory of the Intermountain Forest and Range Experiment Station. Mike is no stranger to Ft. Collins; he received his M.S. in Forest Biometry at Colorado State University.

Dick Myhre, scientific photographer, received his training in forestry at Washington State University. He has been engaged in research in remote sensing of wildland resources at Beltsville, Maryland, Berkeley, California and Ft. Collins. Most recently, he was assigned to the Resources Evaluation Techniques Program at the Rocky Mountain Forest and Range Experiment Station. Dick provides overall leadership to MAG's aerial photography program.

Sharon Hoekstra is MAG's secretary. Sharon transferred to MAG from the USDA Computer Center in Ft. Collins. She is a native of Vermont and has lived in Ft. Collins for about three years.

We presently share our office space with another Washington Office detached team of specialists representing the Area Planning and Development Staff of State and Private Forestry. Max Keetch is a computer specialist involved with development and implementation of micro computer data bases for state forestry planning. His secretary is Sally Scrivner.



*The new MAG family; left to right, Dick Myhre, Bill White, Sharon Hoekstra, Bill Ciesla, Eleanor Franz and Mike Marsden.*

## AERIAL PHOTO CAPABILITY.

Another member of the new MAG family is N128Z, a twin engine seven passenger aircraft. This aircraft was reassigned to MAG from the Rocky Mountain Region (R-2) in Denver on October 1, 1982 as a project aircraft dedicated to aerial photography. It will be used for the small, specialized aerial photo missions which are much needed in Forest Pest Management.

The aircraft is equipped with a Zeiss RMK 21/23 nine inch format aerial mapping camera with an 8 1/4 inch focal length lens. This camera system is assigned to the Rocky Mountain Forest and Range Experiment Station and has been used for a number of Forest Pest Management photo missions in the past.

During the past field season, Dick Myhre, MAG scientific photographer and Ron Bell, a pilot with the Rocky Mountain Region designed and constructed the special mounting devices needed to adapt the various components of the camera system to the Queen Air's camera hatch. A test flight in May proved the installation to be operational. Several operational photo missions were flown later in the field season.

Requests for photo missions should be made to Dick Myhre of MAG. The Rocky Mountain Region Aviation and Fire Management Staff will continue to provide pilots and schedule maintenance of this aircraft.

## MAP REGISTERED GRIDS.

MAG assisted Geometronics specialists from the Washington Office and the Rocky Mountain Region in Denver to put in operation the capability to produce map registered grid overlays for use with optical bar panoramic aerial photography.

Equal area grids, which are currently used with optical bar photographs correct for the panoramic distortion but do not take into account changes in surface elevation. The new capability integrates topographic data with the panoramic distortion to produce a grid that is unique to each frame of optical bar photography. This capability currently resides at the USDA Fort Collins Computer Center.

Map registered grids were evaluated in conjunction with a mountain pine beetle survey of a portion of the Shoshone National Forest in Wyoming during the past summer.

## DWARFMISTLETOE LOSS ESTIMATE UPDATED.

An updated estimate of losses caused by the dwarfmistletoes, Arceuthorium spp., has been compiled. These parasitic plants infect a number of commercially important western conifers and cause an estimated loss of 417.84 million cubic feet per year. Most severe losses occurred in the Pacific Northwest (R-6) and Pacific Southwest Regions (R-5). This loss is a combination of growth reduction and direct tree mortality.

The updated estimate is based on special surveys, stand examinations, resource inventories and existing data submitted by Forest Pest Management staffs from regions and areas where dwarfmistletoes are a problem. These data were compiled by Dave Drummond, formerly of MAG and presently field representative for the Pineville, Louisiana Forest Pest Management Field Office, Southeastern Area. A report which summarizes these data is in press.





*Queen-Air N128Z, the Forest Service's  
aerial photo aircraft.*

*Interior of N128Z showing camera system.  
Dick Myhre is operating the camera system.  
Ron Bell, pilot with the Rocky Mountain  
Region is at the controls.*



## MOUNTAIN PINE BEETLE LOSS SURVEYS COMPLETED.

A special westwide survey to estimate volume loss caused by the mountain pine beetle was successfully completed. The survey was the first operational use of sampling techniques developed by MAG specialists to provide statistically reliable estimates of loss on a statewide basis. The sampling technique is a multiphase design and consists of aerial sketchmapping, large scale color aerial photos and a small ground sample.

Forest Pest Management staff from the Northern Region (R-1), Rocky Mountain Region (R-2), Intermountain Region (R-4) and Pacific Northwest Region (R-6) participated in the survey. Loss estimates were provided for major landownerships (National Forest, Other Federal, State and Private) in Colorado, Idaho, Montana, Oregon, South Dakota, Utah, Washington and Wyoming for infestations in ponderosa pine and lodgepole pine.

Survey data was published in the 1981 Forest Insect and Disease Conditions Report, an annual status report published by the Washington Office Forest Pest Management Staff of USDA Forest Service.

This effort resulted in the first data on forest insect and disease losses presented in accordance with the standards defined by the Forest Insect and Disease Information System (FIDIS).



## IMPACT OF MOUNTAIN PINE BEETLE.

Loss statistics by themselves do not provide an estimate of impacts on various forest resource values. These data must be integrated with land management objectives to provide a true picture of impact. This is the subject of a demonstration project which is being spearheaded by Bill White, MAG impact evaluation specialist.

The demonstration involves the integration of in place FIDIS format data on mountain pine beetle losses in ponderosa pine forests collected from the Pike National Forest in Colorado with data from the forest's land management plan. These data include timber resource inventories, the location of a scenic corridor and several forested communities.

The U.S. Fish and Wildlife Service, Western Energy and Land Use Team, a Ft. Collins based team of specialists has been contracted to perform the integration using their geographic information system - MOSS, a user friendly map overlay system. Resultant data will be subjected to analysis by a series of models which will estimate mountain pine beetle on timber resources, scenic quality and residential forested communities. These models were developed by Terry Daniel and David King of the University of Arizona, Gregory Buhyoff, Virginia Polytechnic and State University and Richard Walsh and John Olienyk, Colorado State University.

Funding for this project was made available by Fred Kaiser, economist in the Washington Office, State and Private Forestry.

A technology transfer session is scheduled for November 17 and 18 in the Rocky Mountain Regional Office, USDA Forest Service in Denver.

## GYPSY MOTH DEFOLIATION MAPPED FROM PANORAMIC AERIAL PHOTOS

An evaluation of high altitude panoramic aerial photographs for mapping gypsy moth defoliation has been completed. This evaluation was conducted on a 2800 square mile test site in central Pennsylvania using the Itek Iris II camera, a second generation optical bar camera with resolution superior to the KA-80-A, used earlier for evaluation of mountain pine beetle losses in the Rocky Mountains.

These photos clearly showed defoliated areas which could be classified into the two intensity classes presently used by the Pennsylvania Bureau of Forestry and transferred to USGS 7 1/2 minute quadrangles using sketchmap techniques.

The procedures developed as a result of this evaluation can produce defoliation maps of a quality and accuracy much superior to aerial sketchmapping. In addition, the need for aerial observers mapping defoliation from low flying aircraft can be eliminated.

It may also be possible to evaluate foliage protection in areas treated for gypsy moth control using these photos. This will be the subject of a separate evaluation.



*Sharon Hoekstra demonstrates technique for transferring gypsy moth defoliation from panoramic aerial photos to topographic maps.*

## AERIAL PHOTOS AND THE PANDORA MOTH.

Large and medium scale color infrared aerial photographs can be used to assess foliage protection in ponderosa pine forests treated for control of the pandora moth, Coloradia pandora Blake. These results came from an evaluation done in conjunction with a pilot control project of the insecticide acephate against this pine defoliator conducted by the Southwestern Region's (R-3) Forest Pest Management Staff in Albuquerque, New Mexico on the Kaibab National Forest in northern Arizona.

Aerial photos were taken immediately prior to spraying, before feeding damage was visible and again at peak defoliation. Photos taken at peak defoliation showed markedly greater quantities of foliage retained in spray blocks where larval mortality was high. Ground data confirmed the validity of the aerial photo interpretation.



## COST EFFECTIVENESS OF SPRUCE BUDWORM SUPPRESSION.

How cost effective is direct control of western spruce budworm? If the effect of treatment could be assessed in terms of tree growth and mortality within a stand, then the value of treatment can be assessed in economic terms. This would be of great value to resource managers who must select appropriate tactics for managing this forest defoliator.

A data set from Idaho might provide some clues. In 1979, the Idaho Department of Lands treated 139,000 acres of Western spruce budworm infestation near Cascade with acephate and carbaryl. Historically, insecticide treatments to suppress this insect have covered large areas of continuous host type. During the 1979 project, only high value stands were treated. Adjacent infested areas that had lower timber values were left untreated.

This type of partial treatment poses several questions. Don Cahill of the Boise Forest Pest Management Field Office of the Intermountain Region (R-4) has been the sampling the budworm population and defoliation each year following treatment to determine rates of reinvasion. The impact of defoliation on stand growth is also being studied.

These data were the subject of an intensive analysis which was contracted by MAG to Dr. Paul Mielke of the Statistics Department, Colorado State University. In addition, Mike Marsden, MAG biometrician and Ron Beveridge of the Boise Field Office will analyze and compare the growth of treated and untreated stands within the project area.

## DOLLARS AND SENSE ABOUT YOUR TREES.

The Colorado State Forest Service has published a bulletin entitled "Dollars and Sense About Your Trees." This bulletin explains the consequences of poor management and protection of trees in rural and forested communities and how property values are affected by tree density. It also describes how to increase property values through forest management, particularly prevention of mountain pine beetle infestations.

Although the original study on which this bulletin is based was conducted in ponderosa pine forests of the Colorado Front Range, the concepts apply throughout the coniferous forest of the Rocky Mountains.

MAG has purchased and distributed a quantity of this bulletin to the western regions of the Forest Service. We have a limited supply on hand for small requests. Quantities of this bulletin can be purchased from the Colorado State Forest Service in Ft. Collins.

## MAG STAFF ACTIVITIES

MAG hosted Federico Gonzales and Jose' Cuevas of the Instituto Nacional de Investigaciones Agrarias in Madrid, Spain. Federico and Jose' are foresters involved in use of LANDSAT data for wildland resource inventory. There were briefed on Forest Pest Management activities in the United States and how remotely sensed data, particularly aerial photographs are used in Forest Pest Management.

Eleanor Franz received a Certificate of Merit and quality step increase for sustained superior performance.



## HANDICAPPED PRODUCE TUSSOCK MOTH TRAPS.

A local facility for training the physically and mentally handicapped has been contracted to produce Douglas-fir tussock moth pheromone traps. Eleanor Franz, MAG administrative technician, arranged for the manufacture of 13,000 sticky traps with the Larimer County Foothills Rehabilitation Center in Ft. Collins. These were delivered to the western regions of the Forest Service and cooperating state agencies.

The traps are used to detect pre-outbreak population of Douglas-fir tussock moth, a serious defoliator of Douglas-fir and true fir throughout the west. Male moths are lured to the traps by the synthetically produced female sex attractant. The technique was developed as a result of accelerated research sponsored by the USDA Expanded Douglas-fir Tussock Moth Research and Development Program.



*Steve Hodges, Cathy Harris and Norman Shinn of the Foothills Rehabilitation Center assemble Douglas-fir tussock moth sticky traps.*

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